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Geological and Water Resources of Afghanistan

John F. Shroder* and Brandon J. Weihs

Department of Geography and Geology, University of Nebraska at Omaha, Omaha, NE 68182, USA

Corresponding author: John F. Shroder, Department of Geography and Geology, University of Nebraska at Omaha, Omaha, NE 68182, USA

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Abstract

Afghanistan is rich in mineral and water resources but lacks political leadership and mineral- extraction capacity to fully realize the value and benefits of such commodities, even several world-class mineral deposits. Afghan leaders fail to acknowledge or intervene in continued pollution of water resources that will most certainly be a detriment to future generations as climate change adds drought stress to the country. Many of the Afghanistan resources, except for water, can wait for some future date to develop. The Afghan people who must rely on some of these resources for survival, however, are suffering under the incompetence and backwardness.

Keywords: *World-class mineral resources, Water resources, Hydro-cognizance, Hydro-hegemony, Climate change*

All forms of rock, mineral, and water resources have been assessed in Afghanistan for about the past century, starting mainly by Russian geoscientists from the 1920s through the 1980s [1-5]. By the late 1960s enough progress had been made to produce detailed maps and reports that subsequently were reinterpreted considering plate-tectonic theory, coupled with independent reassessments by Afghan, American, British, French, German, Japanese, and a few other nationalities [6-9]. The result has been the recognition that several trillions of dollars of natural resources have been discovered [10], although recurring political instabilities have so far precluded actual mining much beyond small artisanal efforts to extract coal, gemstones, chromite, stone quarrying, and minor other resources. Several world-class deposits of copper, iron, rare earths, uranium, and lithium occur, with the copper and iron deposits being the largest in Asia [11-13].

Difficulties with studying and understanding all forms of water in Afghanistan (weather climate, glacier ice, river flow, underground water) are plentiful, with increased pollution, drawdown, natural hazards (landslides, rapid wet debris flows, mudflows), flashfloods, and multiple and increasing droughts [14,15]. On the other hand, over-extraction of ground and surface waters is occurring everywhere, particularly now that climate change is well underway across the whole region of South and Central Asia. Furthermore, long-term intransigencies by all prior Afghan governments and their bloated and incompetent bureaucracies were set firmly against even talking about water in any context. In fact, most of the water experts and engineers of the prior Ghani regime have long-since fled the country or gone underground to protect themselves and their families.

These aversions have compounded and added much to living difficulties, especially with the government now being run by an ineffective and largely illiterate Taliban. Almost no recognition of the Taliban government has been granted by outside countries or the United Nations, except for Pakistan, Saudi Arabia, and the United Arab Emirate. As a result, almost all external financial assistance has dried up in the face of pro-religious and anti-scientific pronouncements by the Taliban, who for example, have denied reports of water pollution and linked those reports to supposed enemies of the Afghan people. The traditional government arrangements are not working, however, to solve today's problems with over-extraction and pollution [16]. The Taliban are unwilling to accept any such solutions because they seek to use only Sharia laws, which are only acceptable to some fundamentalist Muslims and are not useful to most villagers.

Hydro-cognizance and hydro-hegemony are two concepts about Afghanistan water that have emerged in the Western literature recently. These need to be understood in terms of scientific approaches to the hydrologic cycle (evaporation, precipitation, glacier, lake, ocean and underground water storage, river flow, etc.), as well as the means to exert hegemonic control over water between Afghanistan and its neighboring countries [17]. Hydro-hegemony has four major pillars: (1) geographic position (top, middle, or bottom of watersheds; (2) material power (demography, infrastructure, literacy, military strength, etc.); (3) bargaining power (water-law awareness, diplomatic skills, etc.); and (4) ideational power (skill with new ideas and new thinking). Afghanistan is at the top of the watershed, which is a very strong position compared to Pakistan and Iran, but quite weak in the other pillars. The result is that aside from the excellent geographic position at the top of the watersheds, Afghanistan is woefully deficient in all the other factors, so much so that the country is vulnerable to hydrologic machinations by the neighboring countries.

In sum, the geology and ores of Afghanistan could become part of the salvation of the sorely beset nation through wise resource extraction. Various transparencies to reduce individual, corporate and government corruption have been introduced by the prior governments, along with ideas on comprehensive extraction, transportation, and refining in various resource corridors, all of which could certainly help jumpstart the rebuilding of the Afghanistan

economy. This would require adoption by the Taliban, who are not known for their ability to comprehend such modernism.

Competing Interests

The authors declare that they have no competing interests.

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